Condensed Concept Issues [TIM]

- To Research Issues: Relative priority of managed and autonomous aircraft
- Can the controller have/need the authority to cancel free flight? Criteria? No: we may learn/identify exceptions from exp's
- What is role of ATC for autonomous aircraft? (connect to bene's)
  - Separation (ATSP not responsible but may provide traffic callouts)
  - To Detail in Procedures: Flow conformance, RTA/slot miss and re-order/swap?
- Need for controllers to have big picture?: decided no problem RM
- Tact Ops (Off-FMS-traj): Broadcast the type/level of intent so ATSP knows (Tom)
- Need complete set of priority rules updated: Tiger Team [membership and deadline TBD]
- How much intent required? Or can be broadcast?: work within current understanding of future broadcast capabilities and research issues will try to learn minimum requirements
- Achieve consensus on future mature state environment: Add RVSM and maintain awareness of future issues as needed.
- Role of A-A voice comm?: Not req'd in concept
- Achieve consensus on min equipage level for managed a/c: Basic ADS-B equivalent state info
- To research issues: RTA precision

Research Issues [TIM]

1. Scalability validation DW
2. Ground protection from autonomous a/c man's (avoid conflicts) DW
3. Status Transition time from autonomous to managed status DW
4. Mixed Equip Conflicts…Res of challenging auto-man conflicts DW
5. Look-ahead horizon (A-A) and impact on controller DW
6. Flow upsetting event…System reaction (robustness) DW
7. Mistaken responsibility b/w air and ground (failure issue) DW
8. Conflicting constraints…A/G assumptions regarding constraints DW
9. A/G redundancy for separation DW
10. Evaluate priority rules for CR of mixed traffic conflicts (baseline + others)
11. Do we need a global deconfliction strategy?
12. Wind and weather errors? (how much, what is needed for exp's)
13. Cooperative or non-cooperative resolution? KB
14. Must all "autonomous" aircraft use the same CD&R algorithm (A-A)?KB
15. Must all aircraft use the same CD&R algorithm (A-G)?KB
16. Broadcast failure (if one aircraft went down) WJ
17. Gaggle Density Traffic Flow Management for CE-5 feasibility
18. Intent issues:
    - What level of intent (and time horizon) is needed?
    - Conformance with intent?
    - Conformance with RTA (what level is needed?) VB

Tiger Teams

Team & Date	Assignment • 1/2 page mission statement from leaders by 11/27	Members
CD&R Feb 28	• Joint Sim Requirements (Harmonized) –Min Requirements for CD&R Capabilities • Air and Ground –Compatible priority rules –Required intent • Outputs: spec	Richard B, PK, Walt, Ed, Vern, Tom, Cesar, Karl, David
Exp Issues Refinement NLT Jan 31	• Review and prioritize Issues for A/G Sims – Reduce issues for A/G Sim Exp's – Recommend how to address remainder (informed decision) • Outputs: Updated	David, Karthik, Vern, Nancy, Paul, Steve
Exp Design March 14	• Propose high level exp design for '04 • ID risks and costs and constraints • Incorporate Issues Team input	PK, DW, KK, DM, Bryan, NS, Paul, Ev, Mike
Technical (Connectivity) Nov 27	• Determine how to connect labs • Outputs: Lab connect req's/plan	Ed, Tom, Mike, and TBD others (e.g., LaRC cont)
Sim Req's Feb 28	• Propose methods to sim many FDs	Mark, LaRC cont, Ev, Walt, Tom

CE-5 Research Issues (Karl)

- **Cooperative or non-cooperative resolution?**
  - Non-cooperative resolution requires comprehensive and unambiguous flight rules to establish priority
    - Can these rules be made to work for multiple aircraft conflicts?
    - Can these rules be extended to resolution with constraints (SUA/RTA, etc)?
    - Is non-cooperative resolution sufficient in highly constrained situations?
  - Cooperative resolution may require more complex procedures and/or algorithms
    - Can it reduce domino effect at very high traffic densities?
    - What type of implicit coordination is required?
    - Is explicit coordination required for highly constrained conflicts?
- **Must all "autonomous" aircraft use the same CD&R algorithm?**
  - Significant issue for cooperative resolution
  - Less relevant for non-cooperative resolution